RECORDED IN ANTBIB

Ann. Entomol. Soc. Am. 56: 721. Smith, M.R. 1963

pyrogallic acid-sodium hydroxide system to take out additional oxygen that remained in the container. After 18 days, five of the six females were still alive. The embryos inside every female (including the dead one) had continued normal development. Additional evidence comes from embryonic heart fragments which remained alive for more than 6 weeks in an environment of extremely low oxygen tension. The hearts were placed in Bray dishes under anaerobic conditions. Ten of the 18 hearts were beating after 6 weeks. Six other hearts were placed in a Bray dish with a KCN system. They stopped beating within a few minutes.

BOOK REVIEWS

THE ANTS OF COLORADO: WITH REFERENCE TO THEIR ECOLOGY, TAXONOMY, AND GEOGRAPHIC DISTRIBUTION, by Robert E. Gregg. University of Colorado Press, Boulder, 1963. 768 pp., 44 figs., 26 tables, 24 pls., 163 species distribution maps, 163 altitudinal charts and 1 colored vegetation map. $14.00.

This comprehensive and impressive publication is based on years of conscientious, painstaking research work and fact gathering. Unlike most of our previous North American ant literature, the emphasis of the book seems to be mainly on ecology. Here the author discusses each species from every possible ecological aspect, pinpointing it to its major and microhabitats. He has been especially fortunate in being able to study ant ecology in a state such as Colorado, which is known for its diverse physiographic features, wide range of altitudes and its numerous plant associations. The taxonomic treatment is adequate for the purpose for which it was intended but it might have been made easier for the reader if the keys for identification had been freely figured and there had also been a glossary of anatomical and biological terms. The book includes 163 species and subspecies of Colorado ants almost all of which belong to the subfamilies Myrmicinae and Formicinae. The subfamily Dorylinae is represented by a single species, the Ponerinae by four species and the other subfamilies are entirely unrepresented. The author, who is a person of strong conviction, does not always use the commonly accepted name or taxonomic status for a given species. He usually, however, explains his reason for not doing so.

The book is largely composed of five main sections. In section 1 the author discusses rather fully the physiography of Colorado, the climate, soil and ecological zonation. Section 2 is concerned with general ecology in which the ants are discussed with reference to habitats, plant associations, life zones, altitudinal distribution, etc. Section 3 pertains to the classification of the ants. Here we find keys that will determine a given ant to its proper species. Under each species may be found such data as the original literature reference as well as other helpful literature references, type locality, distributional range in North America, localities in Colorado from which the ant has been collected, number of state records, the altitudinal range, general habitats, whether rare or common in the state, microhabitats, map showing distribution of the species in Colorado, and also an altitudinal chart. These specific references are followed by a general text discussion of the species with reference to taxonomy, ecology, biology, and distribution. Section 4 is about the zoogeography of Colorado ants and is followed by section 5, an appendix, in which are discussed the geology of the state, summary of mountain environments, list of common and technical names of plants mentioned in the book, ants listed for Colorado by Charles R. Jones, a gazetteer of localities in Colorado from which ants have been collected and a list of species originally described from Colorado. There is also a limited but rather helpful bibliography. The photographic illustrations of ecological areas and ant nests add greatly to the interest of the book.

This publication, although primarily on the ants of Colorado, should also be of much interest to students of Rocky Mountain and Western ants and only to a less degree to students of North American ants. Biologists, ecologists and zoogeographers will also find much of interest in the book. The author deserves the highest commendation for such a finely executed piece of work.

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BEES OF THE EASTERN UNITED STATES, VOLUME II by Theodore B. Mitchell. 7 x 10 inches, cloth bound, 557 pages, 134 figs., 18 tables. Tech. Bull. 152, N. C. Agric. Expt. Sta. 1962. Price $10.00 plus 25 cents mailing costs.

This concludes Mitchell's monumental treatment of our eastern bees. It deals with more than 400 species and subspecies in the families Megachilidae, Anthophoridae, Xylocopidae and Apidae. Inasmuch as the format is identical with Volume I (Tech. Bull. 141, 1960), treating almost 500 forms in the more primitive families Colletidae, Andrenidae, Halictidae and Melittidae, the reader is referred to my earlier review (Bull. Entomol. Soc. Amer. 6: 172–3, 1960) for details on the arrangement and treatment.

This volume continues the high standards established in the first part. The keys to species are well constructed; when used in conjunction with the detailed descriptions the user should have relatively little difficulty in identifying material correctly. Identifications will still be difficult in genera like *Nomada*, where some species could not be treated definitively because of uncertainty as to the limits of intraspecific variation. As in the earlier volume there are descriptions of a number of new species, particularly in several genera of the parasitic bees.

The small number of typographical errors testifies to the painstaking proofreading done by Dr. Mitchell at all stages of production. The more serious lapses, and they are indeed minor, are that some synonymies in *Bombus* are not indicated as new, and that *Laboriopsithyrus* is stated to be a junior homonym of *Emphoropsis* rather than a synonym. I find one difficulty from a bibliographic standpoint, and that is the different bulletin numbers and separate pagination of the two volumes.

My original assessment still stands, that "this is a contribution of extraordinary quality, and Dr. Mitchell merits our highest praise for his achievement". This is not to imply that additional work is not needed on our eastern bees. Undoubtedly there are still some new species to be collected, and there will be some future synonymy when the sexually dimorphic sexes of some species are finally associated through patient field observation. This does not detract from the worth of Mitchell's work, which will be a boon to workers in bee taxonomy and bionomics for many years to come. May the other groups of insects soon receive comparable treatment from equally competent taxonomists!

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